

Of Ants and Men

By AVRO MANHATTAN

ONLY a short time ago man believed the earth to be the centre of the universe, with himself as the masterpiece of both. Today, aware that the laws which bind the atoms and the nebulae are the same as those which rule the entire universe, he is stunned by the discovery that the elaborate edifice of his uniqueness was but a figment of his over-wrought imagination. More, he has not yet fully adjusted himself to the concept that to a primordial cosmos, the amoeba and the pachyderms, the plants, the bacilli, are on a par with him; indeed, that notwithstanding his peculiar achievements he is but one of the countless species constantly flowing in the majestic river of evolution.

The records of the rocks are mute testimonies of many which, having once fatiguingly scaled its steep banks, are now extinct. Not all, however, have been turned into fossils. Some are contemporary with us, living stepping-stones of the evolutionary journey which many races had to travel before crystallizing into what to us pigmies in time seems to be their ultimate structure. Of these, the most remarkably significant are the communities of social insects, of which that of the ant is undoubtedly the most spectacular.

The first striking feature about the communities of ants is their indubitable resemblance to those of men. Like men, ants can be found everywhere on the globe, from the Arctic to the Tropics; they have evolved societies resembling those of the Australian bushmen or comparable to the totalitarian States; they have constructed dwelling-places analogous to our simplest huts and to our most complicated skyscrapers; they live in communities where individualism is dominant and in others where it has been wholly blotted out. Unlike any other creatures apart from us, they cultivate plants, keep herds, develop crafts, plan elaborate migrations, wage wars against other species and, more frequently, among themselves. They have produced the most abominable social structures and the most complex equalitarianism so far known. They are torn by fierce class struggles, belligerent imperialisms,

insufferable dictatorships. In short, they have practically all the faults and the qualities, the shortcomings and the idiosyncrasies, of men.

Their second remarkable characteristic is that they can be found in all stages of evolution and that the many degrees of their development are astonishingly similar to those of men. Not only with regard to the past, but also in connection with the present and, indeed, with the future.

Ants have not yet attained their ultimate evolutionary goal. Like men, they are still on the march. And as with men, their journey has not been an even one. It was made at the price of costly blunders, biological regressions, imbecile experimentation, sudden leaps in social and even technological advances. Like the human race, they have split into numberless individuals, families, and races, some of which have remained in the most primitive conditions, while others have reached the greatest evolutionary heights.

In short, ant societies are like those of men in their disparity of habits, structures, and types of civilization.

But their third and most astounding feature is that they have evolved a form of economic social organization the like of which does not exist anywhere else on our globe, not even among men.

The factor of age more than anything else has undoubtedly contributed to this. Ants are a race of incredible antiquity. They are thousands, nay, millions of years older than men. They began to conquer the earth in Jurassic times, long before the continents were torn asunder. By the very dawn of the Tertiary age—that is to say, approximately fifty million years ago—they had already achieved the physical and social structures which have remained almost unaltered to this day. Throughout this period, while the most primæval type of placental mammals were painfully evolving into the primates, ants made countless experiments, culminating in the monstrous degeneration of some and in the nightmarish collectivism of others.

To appreciate the immense gulf of time separating ants and men, one should remember that man's ancestry does not go back beyond one million years at the utmost. Yet within this comparatively short period there is encompassed the appearance of the *Pithecanthropus*, of the Neanderthal man, of the Cro-Magnon, comprising the rise of the embryonic human society, from its crudest nucleus to the complex consociations of the twentieth century.

It has been calculated that if it were possible to shoot a film of evolution of living things, giving proportionate length to the successive geological and organic periods, arranging its screening so that it could be unrolled at a uniform rate beginning at 9 a.m., man would appear on the film only a few minutes before midnight. Such is the shortness of the career of man. Such is the antiquity of the ant.

Yet in spite of—or, rather, because of—this great evolutionary disparity, the unique parallelism of the two species could help to reconstruct, not only some dim outline of our unknown past, but also certain human evolutionary portents of the future.

Today mankind, notwithstanding its cultural and racial diversity, on the whole can be considered homogeneous. But supposing that by a miraculous displacement of time and space it were possible to gather all its races in a spectacular promiscuity, so that the citizen of a chromium-plated age should co-exist with hordes of roving Huns, aristocrats of the eighteenth century with mammoth-hunters, the inhabitants of a modern skyscraper with grunting flint-makers, the human race would offer a spectacle which could be labelled at least astounding.

This is precisely the case with the ant, whose sundry evolutionary graduations are still extant side by side after fifty million years. The ant, therefore, is a living book on whose leaves can be examined the history of an ancient race, from the remotest past to the present; indeed, in relation to man, paradoxically enough, to the remotest future.

But who can guess the shape of human society to come? It is here that a closer scrutiny of the formicary might help to indicate the path along which mankind has just begun to embark.

Ants have evolved by going through three main evolutionary stages, all of which still co-exist, as in a much milder way is the case with men: the hunting, the pastoral, and the agricultural.

The hunting ants live mainly on the produce of the chase, are carnivorous, gather in small loose communities, are staunch individualists, care only for themselves, trap, fight and kill singly, and have no collective action, save for self-defence. They are the equivalent of the lower type of primitive man, barbaric, cruel, and bloodthirsty.

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The pastoral ants lead a stable social life, taming and attending domesticated animals, such as plant-lice and beetles, corresponding to man's cows and sheep. They are gregarious, live in large communities, and although acting collectively in time of danger, they still maintain a noticeable individual and group liberty. They can be compared to the pastoral tribes living on the produce of their herds and flocks.

The agricultural ants, among which can be found the harvesting ant, the mushroom-growing ant, bear a most striking resemblance to agricultural human societies. These communities are settled and well ordered, but the freedom of the individual is replaced by a strict discipline, while the self-seeking incentive has been directed into an eager individual acceptance of the need to contribute, first and last, to the welfare of the community.

There follows what one could arbitrarily call the technical ants, the ants which have developed crafts, such as the leaf-cutters, the arch-builders, the road-builders. These ants are an integral part of the highest agricultural communities, the two having practically amalgamated.

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The most striking feature of ant evolution is that its upward trend gained impetus mostly by virtue of a gradual displacement of individual initiative at the expense of freedom, until the demands of the community became paramount. This can be demonstrated by the two extremes of ant society. The hunting ant, as an individual, is its own master. It owns what it gets, and when it shares its kill it does so freely, and not because it is duty bound. But here, as in human society, freedom cannot be enjoyed scot free. If this type of ant is the freest of all, it is also the freest of all to starve. As long as game is abundant, things go well; when scarcity occurs, however, then independence is no longer the blessing of easier times. The individual has to put up a tougher fight against both natural disasters and the members of its own group. Like human history, plagued with famines of immense magnitude, so also in the case of the ants, whole societies are exterminated by lack of food. When that happens, individuals perish in large numbers. Such annihilation occurs also to the most advanced communities, but, as in parallel human societies, the peril can be greatly reduced and often even eliminated.

At the opposite side of the scale, the agricultural ant enjoys hardly any individual liberty. Through the all-embracing demands of the community it has been reduced almost to an automaton, with no personal initiative or will. These losses, however, have been handsomely repaid. The ant surrenders its food to the community in times of plenty. But the community returns to it its rightful share in times of famine. The ant has its individual movements restricted, but the community guarantees it an individual immunity unknown to the free-hunting ant. The ant surrenders its will to a collective all-embracing one; but then it is a communal will, that ensures for the individual its own safety, welfare, and future.

In short, when these two types of ants are faced with similar hostile phenomena, whereas the free ants suffer and often are exterminated, the social ants, with all the power of the community behind them, feed in times of famine, are protected in times of danger, and survive when their independent hunting brothers perish.

At present man is faced by a great dilemma. How far should the community, in the name of collective welfare, be permitted to override the individual? Opinions about this are hostile, violent, and discordant. Rival systems have arisen. The most formidable seems to be championing the absolute supremacy of the community as opposed to that of the individual; its counterpart, the freedom of the individual as opposed to that of the community. *Quo vadis?* Where is mankind heading? Towards a portentous super-individualism, or a future flattened by a monstrous collectivism where individual liberty is no longer, not even in name?

Ants have already replied to such tenebrous questions. Their answer: the erection of powerful social structures, the sum of uncountable experiments carried out during millions of years. And the most successfully efficient of those so far evolved undoubtedly are those in which collectivism has triumphed. Collectivism, however, before crystallizing into its present form, had to go through many phases, some of which grotesquely resemble analogous societies of modern man.

Stigmatomma pallipes, of North America, and *Amblyoponæ*, of Australia, which belonged to the same group before the continent separated, are illuminating examples. Of immense antiquity, they

are true "living fossils" *vis-a-vis* the more evolved ants. Being primitive, *Stigmatomma* is an individualist, hunts singly, stings its prey to death, and devours its catch on the spot. Once it has fed, what is left is eventually given to the nest. Here the rule is, *Myself first, Community second*—a feature shared by all ants at the dawn of their race. But where brutality asserts itself is in the *Stigmatomma* young. Stronger than average, they search for their own food from the very start. If they find some, well and good; if not, they assault their brother and eat him. Whenever they can, they do not hesitate to attack their grown nurses, and if able to overpower them, as they often do, they simply devour them. Here individualism is at its crudest, but also at its fullest.

When this rough individualism is rudimentarily collectivized, then the rights of others outside the nest are disregarded, ignored, and trampled underfoot. And, as in ancient human society, slavery makes its first appearance and constitutes one of the most striking aberrations in the social life of the formicaries, some of which ultimately become so dependent upon it that their social structure would collapse were it made to stop.

There are many varieties, degrees, and kinds of slave-driving and of captive ants. The course of this system follows a pattern frequently experienced by human kind. A strong, ruthless race reduces to servitude a peaceful one which is forcibly integrated in the raiding formicary. Two sharp divisions ensue: masters and slaves, and the economic social structure of the community is gradually modified to suit both. The slaves attend to almost everything, until their masters become their subordinates.

Polyergus rufescens, for instance, a typical slave-driver, has become dependent upon enslaved labour and relies on it even for its own feeding. Because of this, *Polyergus* has lost its autonomy. Its community, the size of its brood, its food supplies, all its activities, in fact, are governed by its slaves. Another master-race, *Strongylognathus*, have become also so degenerately impotent that during their raiding expeditions their slaves actually do most of the fighting.

Polyergus and *Strongylognathus* maintain their overlordship mostly by bluff. Whenever their slaves revolt, however, an occurrence by no means rare, the revolt is a success. Deprived of them, the community collapses, and both *Polyergus* and *Strongylognathus* perish of starvation.

A broad analogy with the master races of antiquity or with the

great land-owning classes of the Middle Ages, and to a lesser extent with the moneyed dynasties of recent times, here seems justifiable. This type of social structure has ended in an evolutionary blind alley. Polyergus and their allies are fast decreasing, their system having proved unsatisfactory.

The most progressive ants, having by-passed this, have accepted its opposite extreme, collectivism, up to now their most universally adopted evolutionary formula. As the most remarkable achievement of the primitive formicary was the almost anarchical independence of the individual, which, paradoxically enough, culminated in slavery, so that of collectivism is its phenomenal development of a social conscience. Communal welfare becomes the mainspring of the minutest and the most important actions of all ants which live, work, and die for the community. It is its welfare, not that of the member, which comes first and last. The result is regurgitation—the most spectacular manifestation of co-operation so far known.

A foraging ant collects liquid food, uses the tiniest quantity for its personal use, but on its return to the nest it distributes the lot to the nearest members of the formicary, who, having absorbed only a small part of the gift, in their turn re-distribute the excess to others, until the crop brought by a single expeditioner is shared in a short time by an extraordinary number of individuals. Regurgitation, totally absent in the less socially developed ant, is, in fact, the utopia of the social reformer and has here become a reality.

The price paid for it, however, seems exorbitant. To obtain the mass unselfishness of regurgitation, collectivized ant had to build such a monolithic community that some of the most fundamental laws of nature had to be violated and, in some cases, even repudiated. The small, independent family is gone, the immensely anonymous community having taken its place; individual parenthood is no more, a communal matrix having substituted it; sex has been radically modified and in cases atrophied altogether; a small minority of normal males and females are tolerated only to perform the act of procreation, after which they are ruthlessly eliminated. To each individual is assigned a specific task, and the decision is irrevocable. The community decrees who shall be a worker, a soldier, a mother, and also how many shall be permitted to be born. To make sure that not one shall escape its destiny, the physical shape of the body of each has been so manipulated that it would be impossible for it to perform any task except the one assigned. Thus an

individual who was made to be born a soldier will be given powerful mandibles and will have to fight. A second who was made to be born a worker will be given an agile body, the better to collect victuals. A third will have its organs handled so that it can perform some other specialized task, a nightmarish instance being that of the *Myrmecocystus*, which have to store nourishment—a kind of honey—until they become so incredibly distended that they are condemned to hang from the roof of the subterranean rooms, literally as living honey-pots, for the rest of their lives.

In such a society, therefore, all ants are reduced to mere units, rigidly divided into castes, where no one could survive a single moment independently of the community, the repository of a formidable homogeneous will, self-sufficient, impersonal, ruthless, and omnipotent.

Whether such an extreme form of collectivism is the product of an intelligent regulatory force, or of a mechanistic behaviour, it is impossible to determine. Its structural evolution, however, seems to prove that a quasi-automatic process obeying some fundamental evolutionary law common to ants and men is irresistibly driving both towards collectivism. The analogous development of formicaries and human societies seems to bear this out. Ants—who, like wasps and bees, derived originally from the Hymenoptera—embarked on their social career as sundry solitary individuals. From this they passed through a pre-social stage, centred around a loosely crude single family, to a social stage where consociation of large groups has taken place, and further to a still higher social stage where the community is semi-collectivized, its members are assigned specific tasks, while their sex and their physical framework are slightly modified, and finally to a thoroughly socialized stage where the individual, rendered sexless, powerless, and initiativeless, is transformed into an anonymous instrument in a mastodontic community ruling above all.

At present man seems to be making efforts to erect social structures broadly resembling those to be found in the penultimate stage. The rise of certain ruthless contemporary despotisms, however, could be the concrete proofs of his incapacity to guide the maelstrom of collectivism in the right direction. At the same time, the profound perturbation of our age might well be his reaction against the growing encroachments of an irresistible form of collectivism going awry.

Be that as it may, the fate of the formicary seems to prove man's inability to escape the gravitational laws leading to it. Should this be truly so, must we conclude that we are heading towards the appalling super-collectivism of the ants? Or can we still believe that a balanced co-ordination of all the intellectual and emotional powers of man, by harnessing the primordial surge of an oncoming monocracy, could permit him to modify its most abhorrent features to such an extent that all the horrors of the formicary could well be wholly by-passed? On this point the formicary is mute.

In view of the impossibility of fathoming these questions, it is tempting to seek refuge in cognate speculations; such, for instance, as to the ultimate purpose of nature, seemingly intent on the building of larger and ever more potent structures and ever more complicated consociations.

It is assumed that life began with separate single cells. From the limited confines of a solitary existence the cells, by accepting the absorption into groups, resulted in the multicellular animal and plants, wherein generations of cells end their existence as tiny components of some organ, precisely in the same manner that successions of workers, soldiers, and harvesting ants, compose the castes of a collective formicary, or a succession of farmers, architects, shop-keepers, and others, form the groups of which human society is composed. These groups in their turn, by permitting absorption into a vaster unit, resulted in societies wherein they spend their corporative existence as its components, just as the castes spend their existence within the rigid framework of the formicary and the sundry classes of human society within the framework of contemporary national units.

Are such castes or groups—or, for that matter, a whole formicary or a whole nation—a form of life more advanced than the multicellular animals? Is it permissible to think that such units are growing not only in complexity and coherence, but also in directional will of action and, above all, in a collective form of self-consciousness? It has been suggested that the higher type of ant societies are organizational entities with an independent will of their own, just as an animal is a self-conscious unit, the cells forming his body corresponding to the ants and the castes forming a formicary. In the case of the formicary, as of human society, of the cells of plants as of animal life, evolutionary advances seem to be mainly a matter of semi-automatic team work. Already in

human society itself, as in that of the ant, it takes a whole team of experts to perform specialized tasks. Such team-work—even if so far only in embryonic form—has proved one thing: that the individual of an ever more complex community has increasingly to part with a certain amount of his own separateness—that is to say, personal freedom.

Where will this lead mankind? Can it be that as the multicellular plant has achieved the longevity of the oak-tree, and the multicellular animal has produced man, the goal of all this is the ultimate promotion of a self-conscious, collectivized mankind, the composite product of all its members, classes, and races, just as multicellular consociations have produced *Homo sapiens*? If that should be the case, how far will such a process be permitted to go in the near and distant future? And, above all, what will be the *summum bonum* of it all?

To everything in the universe, from a cell to a star, is allotted a certain span of life, to solve the evolutionary riddle. Numberless species have come and have gone without finding the final answer. Man may be one of them. In which case it is still possible that after the very memory of his name has been swept away for ever in the receding tide of the past, the formicary, and not the descendants of the hominids, might inherit the earth. Better to be humble before the sealed book of the future, therefore; for, alas, our minds, no matter how successful in penetrating the mysteries by which they are surrounded, are nothing but tiny sparks shining uncertainly in the tenebrous immensity of the universe.